(j) CLAIMS:

1. A method of producing an actuator for use in an injection arrangement, the method comprising:

providing a block of ferroelectric material;

cutting and/or shaping the block to a final size to provide a ferroelectric sample that forms an active element of the actuator, the ferroelectric sample having first and second opposing end faces, first and second opposing side faces, and a stack of ferroelectric layers, wherein adjacent layers of said stack are separated from one another by internal electrodes arranged substantially parallel to the end faces of the sample;

subsequent to the cutting and/or shaping step, applying a primary external electrode arrangement to the first and second end faces of the sample;

immersing the sample and the primary electrode arrangement within a dielectric fluid;

applying a primary poling voltage to the primary external electrode arrangement so as to polarize substantially the entire ferroelectric sample along a single, first polarization axis in a first polarization direction;

applying a permanent secondary external electrode arrangement to the side faces of the sample so that the secondary external electrode arrangement makes contact with the internal electrodes; and

applying a secondary poling voltage to the secondary external electrode arrangement so as to polarize alternate ones of the ferroelectric layers along substantially the first polarization axis in the first polarization direction and the others of the ferroelectric layers are polarized along a second, oppositely directed polarization axis, thereby to polarize substantially the entire sample and avoiding discontinuities in ferroelectric strain throughout the sample.

2. The method as claimed in claim 1, wherein the step of applying the primary poling voltage is applied prior to the step of applying the secondary poling voltage.

3. The method as claimed in claim 1 or claim 2, wherein said internal electrodes are grouped into first and second interdigitated sets of electrodes, each set comprising a plurality of internal electrodes.

4. The method as claimed in any of claims 1 to 2, further comprising a step of removing the primary external electrode arrangement from the sample prior to applying the secondary external electrode arrangement.

5. The method as claimed in any of claims 1 to 2, further comprising a step of inserting the sample between a pre-mounted primary external electrode arrangement so that first and second primary electrodes contact the first and second end faces of the sample respectively.

6. The method as claimed in any of claims 1 to 2, further comprising a step of applying a conductive film to the first and second end faces to provide first and second primary external electrodes of the primary external electrode arrangement.

7. The method as claimed in any of claims 1 to 2, wherein said step of immersing is performed during the application of the primary poling voltage.

8. The method as claimed in claim 1, further comprising a step of applying a heating effect to the sample following application of the primary poling voltage to aid evaporation of the dielectric fluid from surfaces of the sample and/or the electrodes.

9. The method as claimed in any of claims 1 to 2, wherein the primary voltage is no greater than 4 kV.

10. The method as claimed in any of claims 1 to 2, wherein the secondary voltage is no greater than 200V.

11. The method as claimed in any of claims 1 to 2, wherein said step of applying a primary poling voltage is performed while the sample and the primary electrode arrangement are immersed within a dielectric fluid.